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Reference No. 039611

Mr. Rosauro del Rosario  
EPA Project Manager/Coordinator  
United States Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard  
Chicago, IL 60604



Dear Mr. del Rosario:

Re: Phase III Groundwater Investigation Report  
Himco Site, Elkhart, Indiana (Site)

Please find attached the Phase III Groundwater Investigation Report for the Himco Site. Conestoga-Rovers & Associates (CRA) has prepared this submittal on behalf of the Himco Site Trust for your review and approval.

Should you have any questions, please call me at (519) 884-0510.

Yours truly,

CONESTOGA-ROVERS & ASSOCIATES

Denise Gay Quigley

DT/lp/35

Encl.

cc: Doug Petroff, IDEM (2 copies)  
Kevin Howe, USACE (3 copies)  
Gary Toczykowski, Bayer HealthCare  
Tom Lenz, Bayer HealthCare  
Alan Van Norman, CRA (electronic)  
Alan Deal, CRA



# PHASE III GROUNDWATER INVESTIGATION REPORT

HIMCO SITE  
ELKHART, INDIANA

Prepared For:  
Himco Site Trust

**Prepared by:**  
**Conestoga-Rovers**  
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## **1.0 INTRODUCTION**

### **1.1 PURPOSE**

This report documents the Phase III Groundwater Investigation completed at the Himco Site, located in Elkhart, Indiana (Site). Conestoga-Rovers & Associates (CRA) completed the investigation on behalf of the Performing Settling Defendants (PSDs), collectively known as the Himco Site Trust.

The Himco Site is a National Priorities List (NPL) site that is being remediated pursuant to a Consent Decree (Civil Action No. 2:07cv304 (TS)) (CD). The Statement of Work (SOW), included as Appendix B of the CD, specified the Remedial Action (RA) requirements for the Site. The SOW requires groundwater investigations to the east and southeast of the Himco Site and the implementation of a Groundwater Monitoring Program. CRA, on behalf of the PSDs, prepared a Remedial Design Work Plan (CRA, 2008) that combined the East and Southeast Groundwater Investigations and the Groundwater Monitoring Program into a three-Phase Groundwater Investigation that builds incrementally to address the groundwater investigation and monitoring requirements of the SOW.

The Phase III Groundwater Investigation included the installation of nine new monitoring wells in 2011. This report presents the borehole logs, monitoring well installation details, and geologic cross-sections for Phase III wells. Analytical data for the Phase III wells will be presented in the Second Annual Groundwater Monitoring Report scheduled for submittal to USEPA in November 2011.

### **1.2 BACKGROUND**

The Site is a closed unlicensed landfill located at the intersection of County Road 10 and the John Weaver Parkway (formerly Nappanee Street Extension) in Cleveland Township, Elkhart County, Indiana. The Site is approximately 60 acres in size, and accepted waste such as household refuse, construction rubble, medical waste, and calcium sulfate between 1960 and 1976. The landfill was closed in 1976.

Figure 1.1 shows the Site location. Figure 1.2 shows the layout of the Site, including property boundaries.

The Site consists of two major areas: the landfill, which is covered with calcium sulfate and a layer of sand, and the 4 acre construction debris area (CDA), located on the northern portion of seven residential properties and one commercial property that front onto County Road 10.

The Site was proposed for the NPL in 1988 and was placed on the NPL in 1990. The Remedial Design/Remedial Action (RD/RA) is being conducted pursuant to the CD, which became effective on November 27, 2007. The lead Agency for the Site is the United States Environmental Protection Agency (USEPA) Region 5. The Indiana Department of Environmental Management (IDEM) is the support Agency.

Section II, Paragraph 4.3 of the SOW describes the requirements for the groundwater investigation east and southeast of the Site. The purpose of the investigation is to delineate the contaminant plume emanating from the Site that potentially may be impacting the adjacent aquifer and water supply wells. The East and Southeast Groundwater Investigation and the Groundwater Monitoring Program were combined. Information regarding groundwater quality and groundwater flow directions from both areas is useful for interpreting local hydrogeologic conditions.

Section II, Paragraph 5 of the SOW describes the requirements for the Groundwater Monitoring Program intended to characterize the nature and extent of groundwater contamination beneath the Site. Section II, Paragraph 5.1 of the SOW states that the PSDs "will submit a groundwater monitoring plan as part of the RD Work Plan, which will address the frequency of sampling, the wells to be sampled, and laboratory analyses to be performed." The SOW also requires that the wells be segregated into wells for detection monitoring and wells for compliance monitoring. Paragraph 5.1.4 further states that "all groundwater wells associated with the Site shall be monitored for 10 years, but that an alternate schedule may be used if approved by USEPA."

The objectives of the groundwater investigations are to:

- Delineate the horizontal and vertical extent of groundwater impact from the Site around the perimeter of the Site
- Delineate the plume contaminating the residential well at 54305 Westwood Drive, immediately east of the Site
- Delineate an appropriate buffer zone east of the Site
- Delineate groundwater contaminants that may have migrated south of the Site
- Provide information required to design an appropriate monitoring well network

The Phase I Groundwater Investigation was the first stage of data collection and analysis and consisted of the following tasks:

- Historic data compilation
- Monitoring well reconnaissance and survey
- Baseline groundwater sampling
- Vertical Aquifer Sampling (VAS)

CRA used VAS techniques during the Phase I Groundwater Investigation to characterize the variations in contaminant distribution with depth in the thick sand aquifer sequence underlying the Site. CRA used VAS at the Site to address this data gap and to ensure that any new monitoring wells are installed to the appropriate depths.

CRA completed the groundwater investigation at the Site in phases based on the portion of the Site under investigation and the target depths of the investigation. A phased approach permitted information to be collected during the initial stages of the investigation that would guide the subsequent phases of the investigation. The Phase I Groundwater Investigation included VAS at selected monitoring well locations to investigate the horizontal and vertical extent of groundwater contamination to a depth of approximately 150 feet below ground surface (ft bgs). CRA collected hydraulic monitoring data during the Phase I Groundwater Investigation to evaluate the groundwater flow regime in the vicinity of the Site and to guide future plume delineation. CRA also completed groundwater sampling of the existing wells to characterize groundwater quality beneath the Site.

The Phase II Groundwater consisted of the following tasks:

- Additional VAS
- New monitoring well installation

The Phase I Groundwater Investigation VAS focused on the southern and eastern edges of the Site and downgradient areas to the south, southeast, and east, and was limited to 150 feet in depth. Monitoring wells were installed at the Phase I VAS locations during the Phase II Groundwater Investigation. The VAS portion of the Phase II Groundwater Investigation focused on the southeast corner of the Site and downgradient to the south east. The target depth of some of the Phase II VAS boreholes was bedrock, to investigate hydrogeologic conditions beneath the bottom depth of the Phase I VAS. The results of

the Phase II Groundwater Investigation refined the horizontal and vertical delineation of any plumes at the Site, and improved the definition of background groundwater quality. The Phase III Groundwater Investigation monitoring wells completed the monitoring well network.

CRA has completed the following routine groundwater quality monitoring rounds at the Site to date:

- Baseline Groundwater Sampling (Q1) - October 28 to November 19, 2008
- Interim Groundwater Monitoring Program (Q2) - February 9 to February 19, 2009
- Interim Groundwater Monitoring Program (Q3) - April 29 to May 6, 2009
- Interim Groundwater Monitoring Program (Q4) - August 4 to August 18, 2009
- Interim Groundwater Monitoring Program (Q5) - November 3 to November 11, 2009
- Interim Groundwater Monitoring Program (Q6) - February 23 to March 4, 2010
- Interim Groundwater Monitoring Program (Q7) - June 15 to June 24, 2010
- Interim Groundwater Monitoring Program (Q8) - September 8 to September 15, 2010
- Interim Groundwater Monitoring Program (Q9)- December 6 to December 16, 2011
- Interim Groundwater Monitoring Program (Q10)- March 7 to March 18, 2011
- Interim Groundwater Monitoring Program (Q11)- June 13, 2011 to June 24, 2011

The Phase I Groundwater Investigation report (CRA, 2009) previously provided the results of the Q1 and Q2 sampling events. CRA evaluated the data from the next four quarterly monitoring events, Q3 through Q6, in the Himco Annual Groundwater Monitoring Report (CRA, 2010). CRA also evaluated trends in the groundwater quality data and calculated background concentrations for metals and general chemistry parameters. The Himco Annual Groundwater Monitoring Report (CRA, 2010) includes statistical evaluations of the trends in groundwater quality data based on Q1 through Q6 results. The Phase II Groundwater Investigation report (CRA, October 2010) presents the results of the Q7 round of the Interim Groundwater Monitoring Program, which includes the initial groundwater samples from the Phase II monitoring wells installed in May 2010. The Interim Groundwater Monitoring Report (CRA, April 2011) includes an evaluation of the results of the Q8 round of the Interim Groundwater Monitoring Program and CRA's recommendations for future groundwater quality monitoring in the vicinity of the Site. Pending USEPA approval of the Interim Groundwater Monitoring Program Report (CRA, April 2011), and the proposed reduced monitoring frequency, the PSDs have continued quarterly groundwater monitoring. The results for the Q9,

Q10, and the Q11 monitoring rounds will be discussed in the Second Annual Monitoring Report.

## **2.0 PHASE III GROUNDWATER INVESTIGATIVE ACTIVITIES**

### **2.1 PHASE III MONITORING WELL INSTALLATION**

Figure 1.2 shows the locations of the monitoring wells installed during the Phase III Groundwater Investigation. Stearns Drilling Company (Stearns) of Dutton, Michigan, provided drilling services. Table 2.1 summarizes the Phase III monitoring well completion details and the status of other monitoring wells in the vicinity of the Site.

CRA based the design of the Phase III monitoring wells on the Phase II VAS results, and installed the wells in accordance with the recommendations provided in the Phase II Groundwater Investigation Report (CRA, 2011) approved by USEPA on March 9, 2011. Stearns installed the Phase III monitoring wells using the hollow stem auger (HSA) drilling method and the rotosonic drilling method, and followed the installation procedures provided in Section 2.3.2.1 and Section 2.3.2.2 of the USEPA-approved Field Sampling Plan (FSP) (CRA, October 2008). Stearns also completed the well development in accordance with Section 2.3.3 of the FSP (CRA, October 2008) procedures. CRA surveyed the Phase III monitoring wells in accordance with Section 2.1.1 of the FSP (CRA, October 2008). Stearns installed the Phase III monitoring wells between February 22 and March 31, 2011.

Stratigraphic and instrumentation logs for the Phase III monitoring wells are provided in Appendix A.

### **2.2 PHASE III GROUNDWATER INVESTIGATION WELLS**

The Phase I and Phase II Groundwater Investigations have met the objectives of the groundwater investigation through historic data compilation, VAS, new monitoring well installations, routine groundwater monitoring, and detailed review of the data set. The Phase III monitoring wells complete the delineation of contaminants south and southeast of the Site, and confirm the groundwater flow direction southeast of the Site.

The location of the Phase III monitoring wells and corresponding cross-sections are shown on Figure 3.1. The Phase III wells are also depicted on cross-sections provided on Figures 3.2 through 3.5.

The following monitoring wells were installed during the Phase III Groundwater Investigation:

<i>Well Name</i>	<i>Aquifer</i>	<i>Rationale</i>
WT106C	Lower Aquifer	Maximum metals concentration
WT115B	Upper Aquifer	Maximum benzene concentration
WT115C	Intermediate Aquifer	Sentry monitoring well
WT120C	Upper Aquifer	Delineate groundwater flow
WT121A	Upper Aquifer	Delineate groundwater flow
WT121B	Intermediate Aquifer	Maximum metals concentration
WT122A	Upper Aquifer	Replacement well for WT105A
WT122B	Intermediate Aquifer	Maximum metals concentration
WT122C	Intermediate Aquifer	Maximum metals concentration

CRA installed VAS105 as part of the Phase I investigations on a property south of the Site to investigate groundwater quality in the Intermediate Aquifer and delineate groundwater contaminants that may have migrated south of the Site. Subsequently, the property owner (Mr. Alonzo Craft Jr.) denied the PSDs access to his property to install additional permanent monitoring wells. He agreed to allow permanent monitoring wells on his property if they were located in the right-of-way for County Road 10. In USEPA's June 24, 2010 approval of the revised well locations, USEPA requested that CRA evaluate the elevation of the proposed monitoring wells against the groundwater screening data collected from Phase II borehole VAS115, the closest monitoring well to the proposed well locations. CRA provided this evaluation to USEPA in an email correspondence dated August 11, 2010. Peak concentrations of metals observed in groundwater samples collected from VAS105 across the Intermediate Aquifer were not present in groundwater samples collected from VAS115. Two new Intermediate Aquifer wells, WT122B, and WT122C, were installed at the location north of WT105A at the depths corresponding to the primary and secondary metals peaks in groundwater samples collected at 659 feet above mean seal level (AMSL) and 699 feet AMSL.

As summarized in CRA's May 13, 2010 email correspondence to USEPA, Mr. Craft also required, as a condition to obtaining access, that the PSDs abandon well WT105A, and limit any replacement well to a location within the right-of-way for County Road 10. WT105A was abandoned on March 1, 2011. As summarized in CRA's May 13, 2010 correspondence, replacement of WT105A with a new well, WT122A, at the location shown on Figure 3.1, does not diminish the ability to monitor shallow groundwater quality and movement south and downgradient of the Site. Although the proposed well, WT122A, is approximately 200 feet closer to the Site than WT105A, well

nests WT106 or WTE (see Figure 1.2) may act as sentry well(s) to monitor the downgradient edge of the contaminant plume.

### 3.0 FUTURE GROUNDWATER MONITORING AND REPORTING

The Phase III monitoring wells are designed to provide groundwater quality data to vertically delineate volatile organic compounds (VOCs) in groundwater beneath the Site, and further investigate metals concentrations in potential preferential migration pathways identified by the Phase II VAS results.

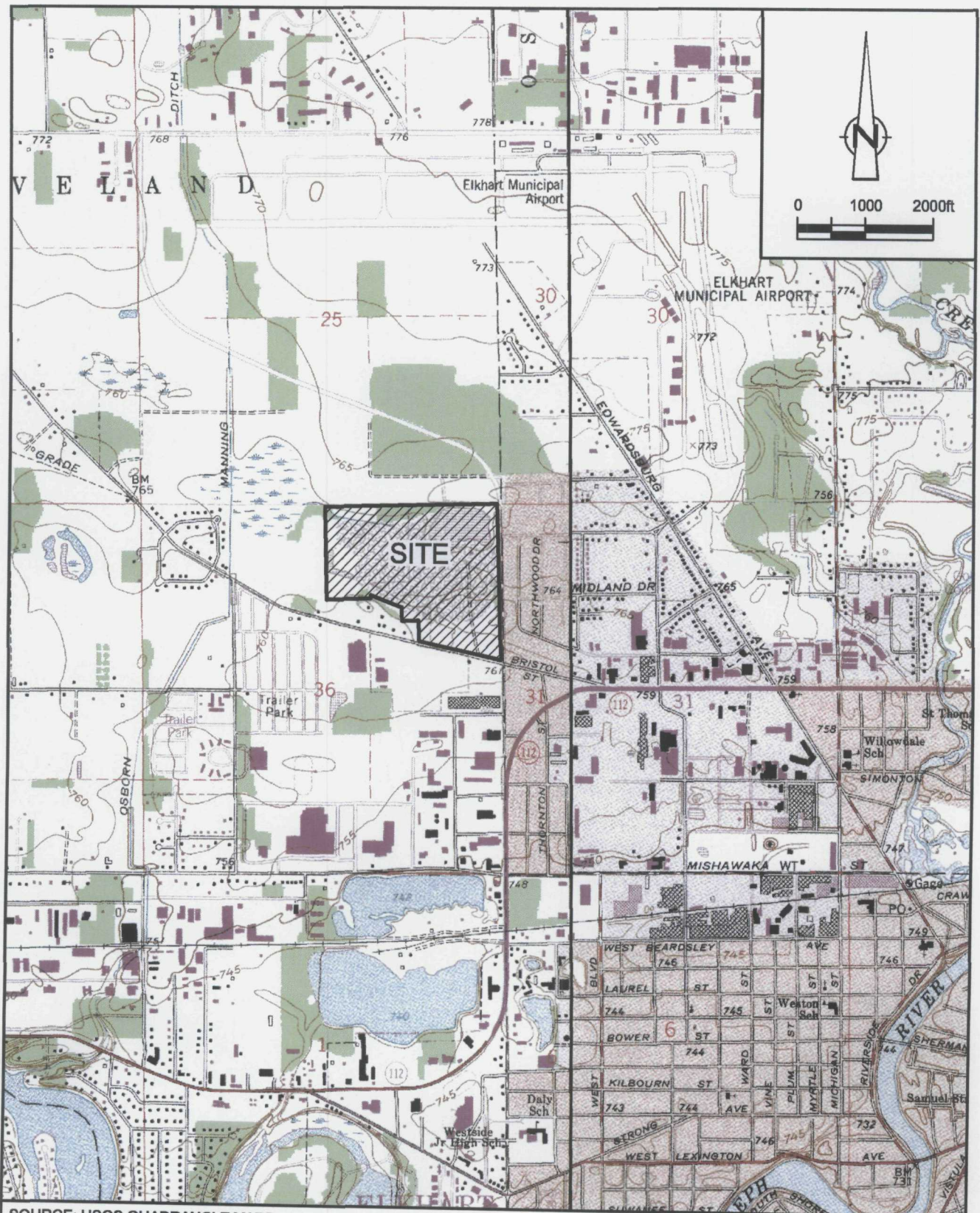
CRA collected the first round of samples from the Phase III monitoring wells in March 2011. Quarterly samples will be collected from the Phase III monitoring wells until December 2011 and will be analyzed for the analytes listed in Table 4.1. This sampling frequency will provide four rounds of quarterly groundwater quality monitoring data for the Phase III monitoring wells. The frequency of sampling will subsequently be reduced to a semi-annual basis, as indicated in the Interim Groundwater Monitoring Report (CRA, April 2011). Future groundwater quality monitoring will be based on the results of the four quarterly monitoring rounds.

The PSDs will submit routine annual reports of groundwater quality monitoring at the Site. The next groundwater monitoring report will be submitted to USEPA in November 2011 and will include monitoring data collected from December 2010 through June 2011.

#### 4.0 REFERENCES

- Conestoga-Rovers & Associates, November 2008. Remedial Design Work Plan, Himco Site, Elkhart, Indiana.
- Conestoga-Rovers & Associates, October 2008. Remedial Design Work Plan Appendix A Field Sampling Plan, Himco Site, Elkhart, Indiana.
- Conestoga-Rovers & Associates, May 2009. Phase I Groundwater Investigation, Himco Site, Elkhart, Indiana.
- Conestoga-Rovers & Associates, September 2010. Himco Annual Groundwater Monitoring Report, Himco Site, Elkhart, Indiana.
- Conestoga-Rovers & Associates, October 2010. Phase II Groundwater Investigation Report, Himco Site, Elkhart, Indiana.
- United States Environmental Protection Agency, December 2002. Supplemental Site Investigations/Site Characterization Report, Himco Dump Superfund Site, Elkhart, Indiana.

## FIGURES



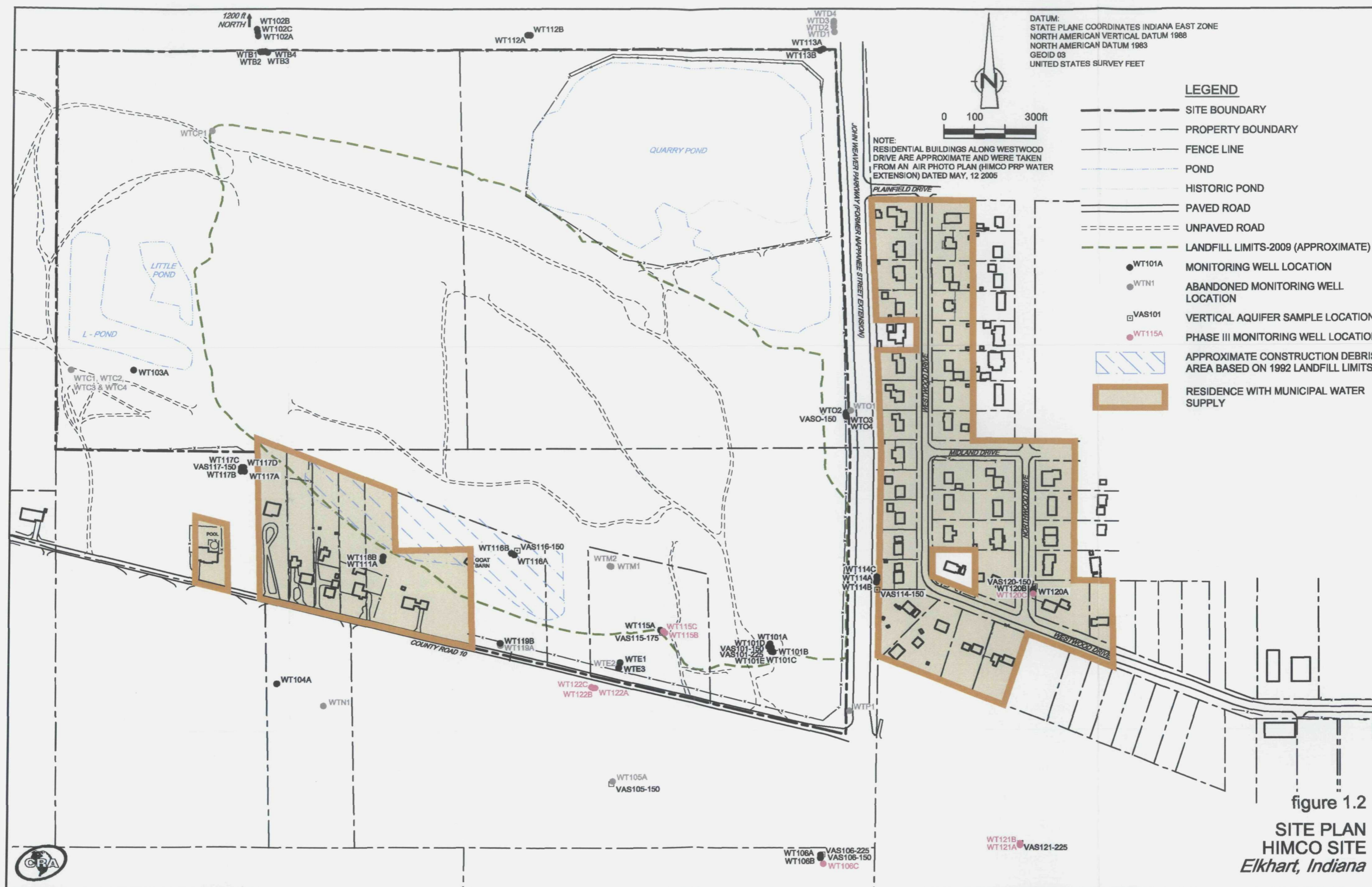
SOURCE: USGS QUADRANGLE MAPS;  
ELKHART AND OSCEOLA, INDIANA

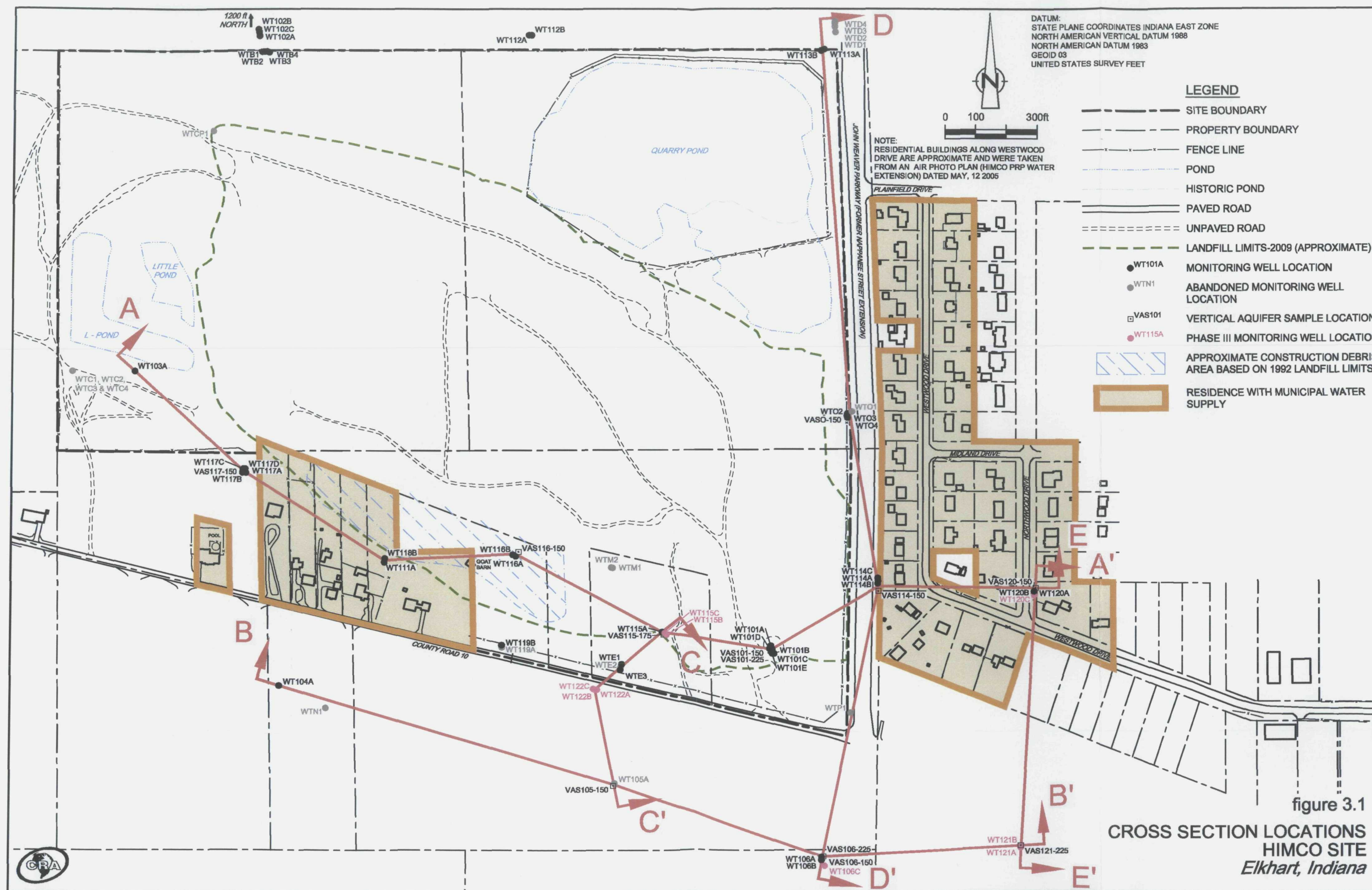


39611-00(031)GN-WA001 APR 26/2011

figure 1.1

SITE LOCATION MAP  
HIMCO SITE  
Elkhart, Indiana





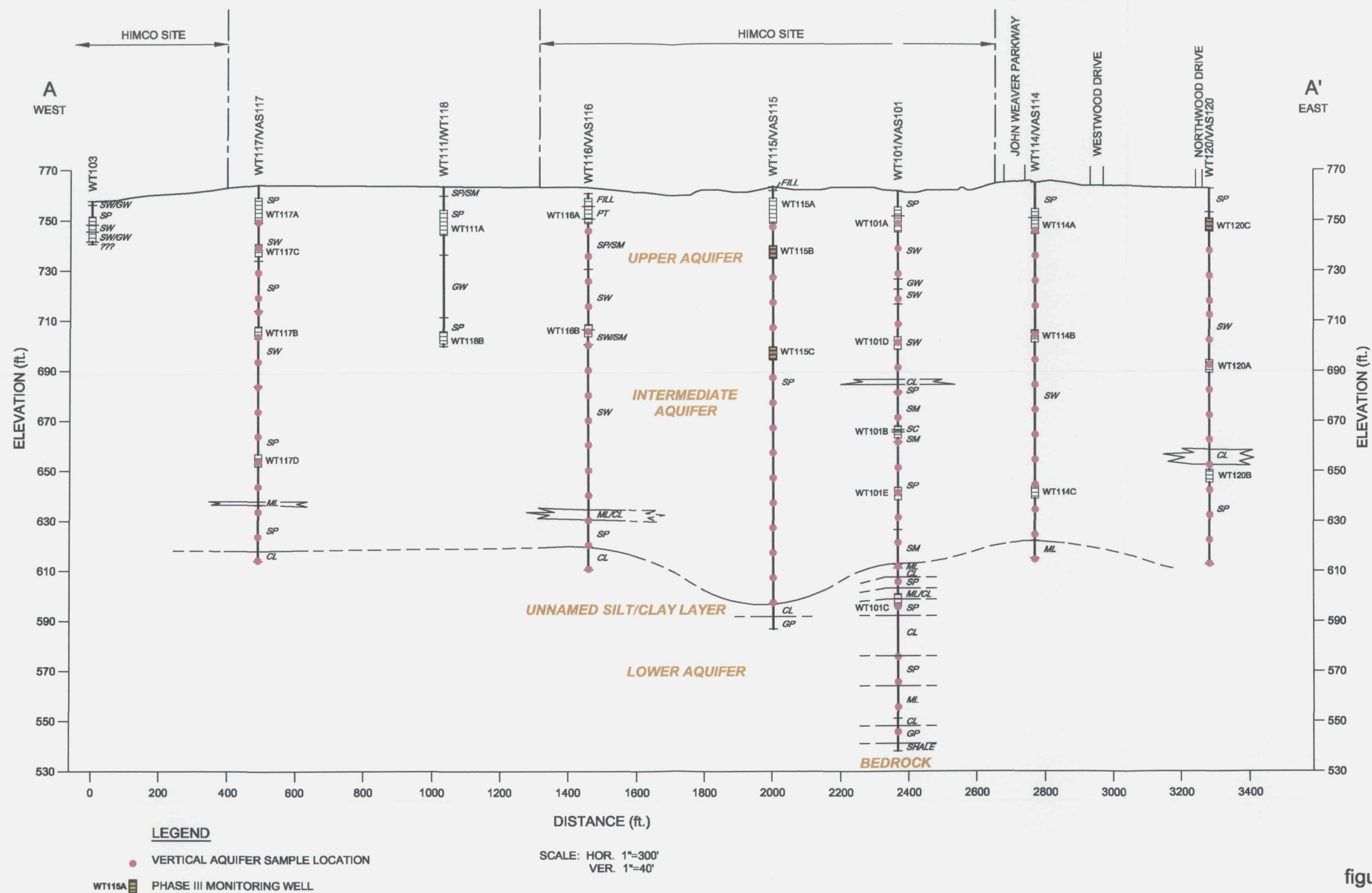


figure 3.2  
CROSS SECTION A-A'  
HIMCO SITE  
Elkhart, Indiana



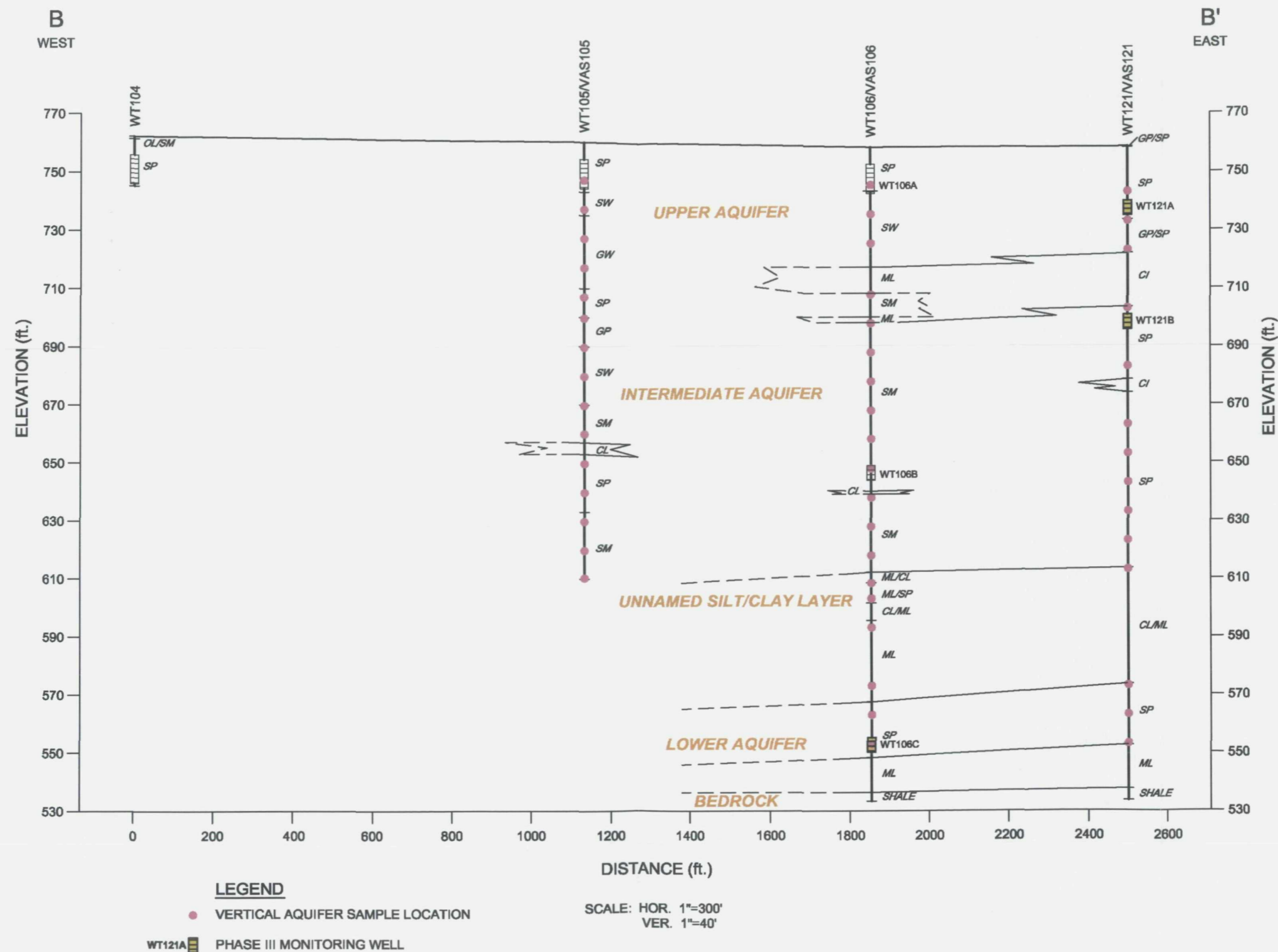


figure 3.3  
CROSS SECTION B-B'  
HIMCO SITE  
Elkhart, Indiana



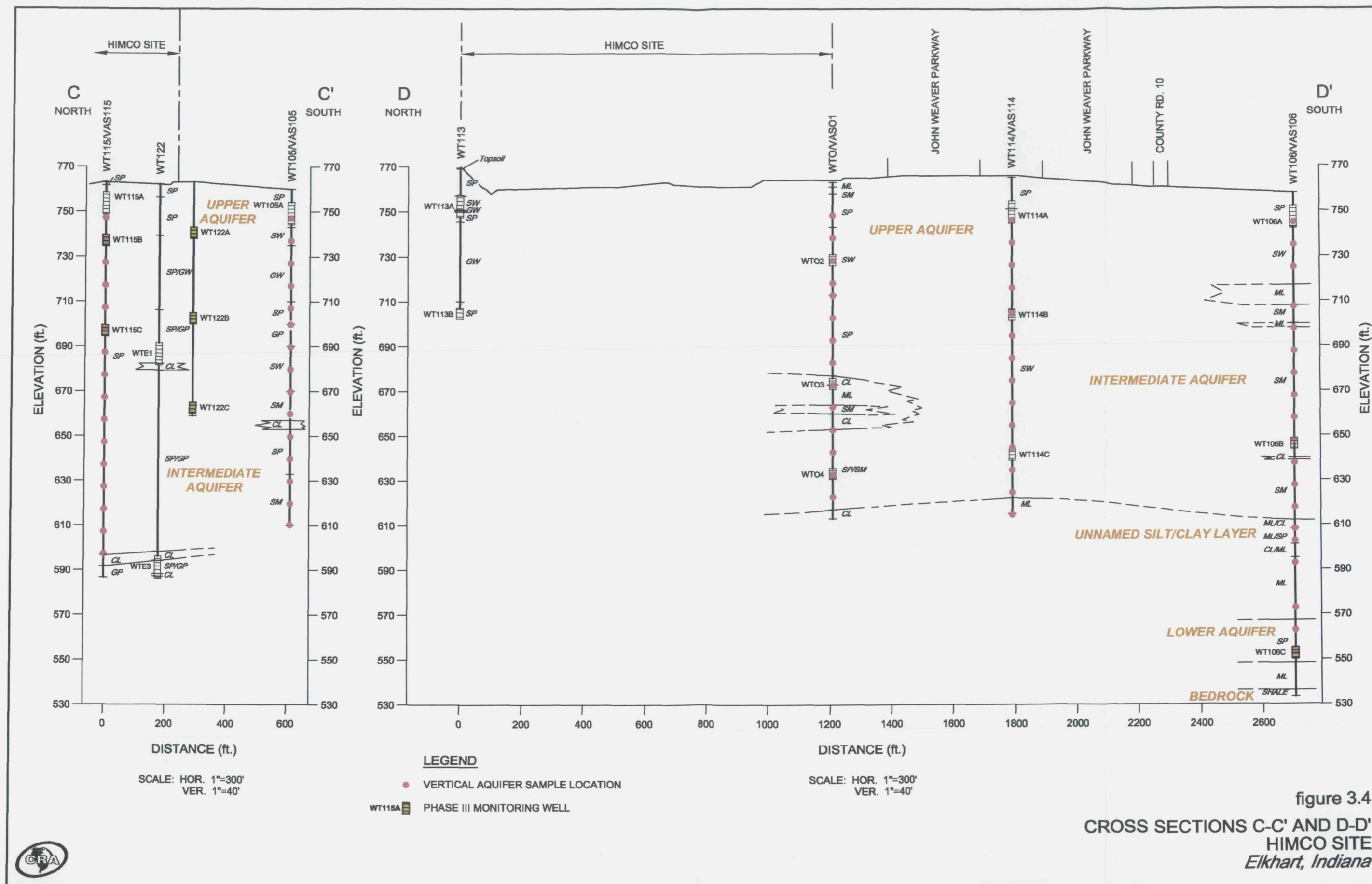
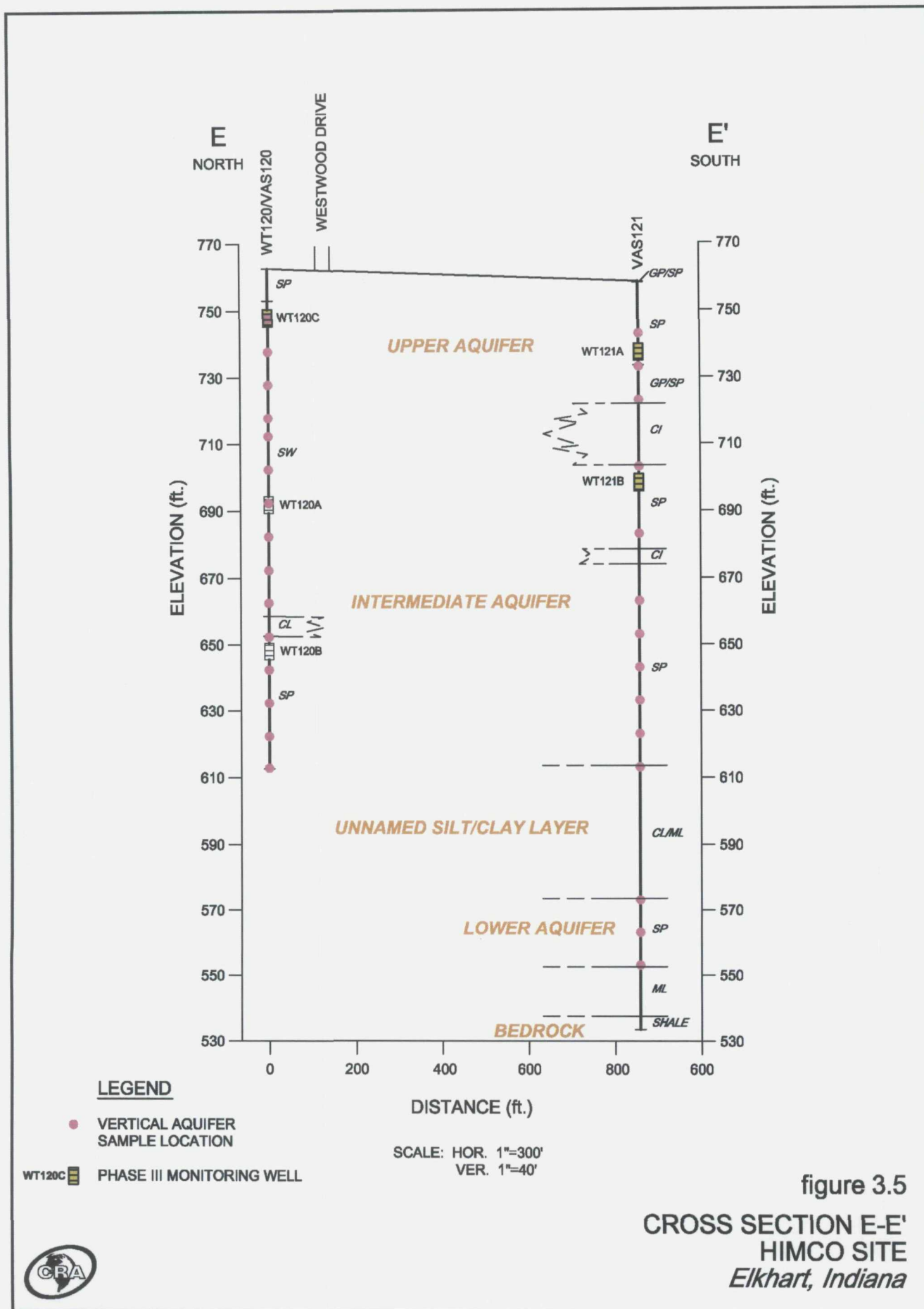


figure 3.4  
CROSS SECTIONS C-C' AND D-D'  
HIMCO SITE  
Elkhart, Indiana



## TABLES

TABLE 2.1  
MONITORING WELL STATUS  
HIMCO SITE  
ELKHART, INDIANA

Well ID	Status	Installation Date	Screen Length (ft)	Material	Casing Diameter (inches)	Installed Depth (ft bgs)	Reference Elevation (ft AMSL)	Ground Surface (ft AMSL)	Top of Well Screen (ft AMSL)	Bottom of Well Screen (ft AMSL)	Aquifer Designation	Northing	Easting
<b>UPPER AQUIFER WELLS (760 - 710 ft AMSL)</b>													
WT101A	Functional	11/12/1990	10.00	Stainless Steel	2	16.3	763.87	761.53	755.23	745.23	Upper	2351887.26	235722.25
WT102A	Functional	11/10/1990	10.00	Stainless Steel	2	16.0	768.50	766.19	760.19	750.19	Upper	2355111.73	234055.37
WT103A	Functional	11/11/1990	10.00	Stainless Steel	2	16.0	760.11	757.60	751.60	741.60	Upper	2352799.65	233645.99
WT104A	Functional	11/12/1990	10.00	Stainless Steel	2	16.3	765.01	762.32	756.02	746.02	Upper	2351753.99	234123.86
WT105A	Functional	11/10/1990	10.00	Stainless Steel	2	16.0	762.37	760.07	754.07	744.07	Upper	2351430.59	235211.48
WT106A	Functional	11/9/1990	10.00	Stainless Steel	2	16.3	761.00	758.46	752.16	742.16	Upper	2351184.52	235885.61
WT111A	Functional	9/10/1991	10.00	Stainless Steel	2	20.0	766.00	764.30	754.30	744.30	Upper	2352165.35	234465.00
WT112A	Functional	8/23/1995	10.00	PVC	2	15.4	765.28	763.71	758.31	748.31	Upper	2353912.48	234933.96
WT113A	Functional	8/10/1995	10.00	PVC	2	21.7	771.27	769.32	757.62	747.62	Upper	2353866.00	235898.24
WT114A	Functional	8/21/1995	10.00	PVC	2	22.0	768.62	766.82	754.82	744.82	Upper	2352102.29	236069.62
WT115A	Functional	8/22/1995	10.00	PVC	2	17.4	765.48	763.28	755.88	745.88	Upper	2351932.43	235367.05
WT115B	Functional	2/22/2011	5.00	PVC	2	28.0	765.88	762.70	739.70	734.70	Upper	2351923.33	235380.73
WT116A	Damaged	8/17/1995	10.00	PVC	2	12.6	763.35	761.30	758.70	748.70	Upper	2352184.92	234891.00
WT117A	Functional	8/15/1995	10.00	PVC	2	15.5	766.70	764.66	759.16	749.16	Upper	2352463.27	234015.45
WT117C	Functional	5/6/2010	5.00	PVC	2	28.0	766.53	763.74	740.74	735.71	Upper	2352476.42	234005.49
WT119A	Damaged	10/14/1998	10.00	PVC	2	17.5		Not Surveyed			Upper	Not Surveyed	
WT119B	Functional	5/10/2010	10.00	PVC	2	18.0	762.62	760.32	752.32	742.32	Upper	2351888.96	234845.50
WT120C	Functional	2/24/2011	5.00	PVC	2	17.0	762.11	762.57	750.57	745.57	Upper	2352052.29	236578.54
WT121A	Functional	2/28/2011	5.00	PVC	2	24.0	758.48	758.87	739.87	734.87	Upper	2351213.71	236533.21
WT122A	Functional	2/23/2011	5.00	PVC	2	25.0	762.58	763.03	743.03	738.03	Upper	2351740.44	235154.91
WTB2	Damaged	11/3/1977	10.00	Black Steel	2	11.9	762.70	760.82	758.92	748.92	Upper	2353858.07	234068.99
WTO1	Destroyed	5/1/1979	5.00	PVC	2	30.0		Not Surveyed			Upper	Not Surveyed	
WTO2	Functional	5/5/2010	5.00	PVC	2	37.0	765.95	763.15	731.15	726.15	Upper	2352659.27	235970.66

Note:

ft bgs - feet below ground surface  
AMSL - above mean sea level

TABLE 2.1  
MONITORING WELL STATUS  
HIMCO SITE  
ELKHART, INDIANA

Well ID	Status	Installation Date	Screen Length (ft)	Material	Casing Diameter (inches)	Installed Depth (ft bgs)	Reference Elevation (ft AMSL)	Ground Surface (ft AMSL)	Top of Well Screen (ft AMSL)	Bottom of Well Screen (ft AMSL)	Aquifer Designation	Northing	Easting
<b>INTERMEDIATE AQUIFER WELLS (710 - 610 ft AMSL)</b>													
WT101B	Functional	12/14/1990	5.00	Stainless Steel	2	98.0	763.70	761.28	668.28	663.28	Intermediate	2351874.60	235726.81
WT101D	Functional	5/3/2010	5.00	PVC	2	63.0	763.62	761.63	703.63	698.30	Intermediate	2351877.84	235718.22
WT101E	Functional	5/4/2010	5.00	PVC	2	123.0	763.40	761.52	643.52	638.52	Intermediate	2351861.93	235726.50
WT102B	Functional	12/2/1990	5.00	Stainless Steel	2	65.4	768.22	765.87	705.47	700.47	Intermediate	2355133.90	234051.70
WT106B	Functional	5/10/2010	5.00	PVC	2	115.0	761.53	758.71	648.71	643.71	Intermediate	2351175.05	235885.57
WT112B	Functional	8/23/1995	5.00	PVC	2	59.4	765.54	763.55	709.15	704.15	Intermediate	2353912.39	234943.21
WT113B	Functional	8/10/1995	5.00	PVC	2	67.2	771.47	769.52	707.32	702.32	Intermediate	2353861.31	235888.26
WT114B	Functional	8/22/1995	5.00	PVC	2	65.3	768.77	766.95	706.65	701.65	Intermediate	2352092.21	236067.36
WT114C	Functional	5/11/2010	5.00	PVC	2	127.0	768.87	766.14	644.14	639.14	Intermediate	2352110.84	236068.83
WT115C	Functional	2/22/2011	5.00	PVC	2	68.0	765.71	762.51	699.51	694.51	Intermediate	2351929.28	235375.59
WT116B	Functional	8/17/1995	5.00	PVC	2	58.4	763.33	762.04	708.64	703.64	Intermediate	2352190.18	234881.80
WT117B	Functional	8/14/1995	5.00	PVC	2	61.3	766.13	764.20	707.90	702.90	Intermediate	2352463.66	234002.76
WT117D	Functional	5/6/2010	5.00	PVC	2	112.0	766.58	763.90	656.90	651.90	Intermediate	2352476.61	234013.25
WT118B	Functional	8/18/1995	5.00	PVC	2	62.5	765.99	763.56	706.06	701.06	Intermediate	2352178.19	234466.70
WT120A	Functional	5/12/2010	5.00	PVC	2	73.0	762.19	762.43	694.43	689.43	Intermediate	2352059.17	236578.58
WT120B	Functional	5/12/2010	5.00	PVC	2	117.0	762.18	762.58	650.58	645.58	Intermediate	2352065.60	236578.16
WT121B	Functional	2/28/2011	5.00	PVC	2	63.0	758.46	758.74	700.74	695.74	Intermediate	2351219.53	236532.99
WT122B	Functional	2/23/2011	5.00	PVC	2	63.0	762.75	762.98	704.98	699.98	Intermediate	2351740.49	235148.61
WT122C	Functional	2/24/2011	5.00	PVC	2	103.0	762.63	762.97	664.97	659.97	Intermediate	2351743.38	235142.97
WTB3	Functional	10/17/1977	10.00	PVC	5	135.0	762.74	760.62	635.62	625.62	Intermediate	2353858.37	234077.13
WTE1	Functional	10/11/1977	10.00	PVC	5	81.0	765.21	762.54	691.54	681.54	Intermediate	2351825.29	235236.36
WTO3	Functional	5/5/2010	5.00	PVC	2	92.0	765.65	763.00	676.00	671.00	Intermediate	2352652.85	235969.84
WTO4	Functional	5/4/2010	5.00	PVC	2	132.0	765.29	762.77	635.77	630.77	Intermediate	2352646.28	235971.31

Note:

ft bgs - feet below ground surface  
AMSL - above mean sea level

TABLE 2.1  
MONITORING WELL STATUS  
HIMCO SITE  
ELKHART, INDIANA

<i>Well ID</i>	<i>Status</i>	<i>Installation Date</i>	<i>Screen Length (ft)</i>	<i>Material</i>	<i>Casing Diameter (inches)</i>	<i>Installed Depth (ft bgs)</i>	<i>Reference Elevation (ft AMSL)</i>	<i>Ground Surface (ft AMSL)</i>	<i>Top of Well Screen (ft AMSL)</i>	<i>Bottom of Well Screen (ft AMSL)</i>	<i>Aquifer Designation</i>	<i>Northing</i>	<i>Easting</i>
<b>LOWER AQUIFER WELLS (610 - 275 ft AMSL)</b>													
WT101C	Functional	12/12/1990	5.00	Stainless Steel	2	165.0	763.57	760.93	600.93	595.93	Lower	2351860.60	235732.84
WT102C	Functional	12/1/1990	5.00	Stainless Steel	2	159.5	768.65	765.94	611.44	606.44	Lower	2355123.61	234053.78
WT106C	Functional	3/30/2011	5.00	PVC	2	208.0	757.72	758.06	555.06	550.06	Lower	2351154.95	235894.48
WTB1	Functional	10/6/1977	6.00	PVC	5	473.0	763.06	761.58	294.58	288.58	Lower	2353857.39	234061.79
WTB4	Functional	10/7/1977	5.00	PVC	5	173.0	761.77	760.67	592.67	587.67	Lower	2353855.62	234084.92
WTE3	Functional	10/11/1977	5.00	PVC	5	176.0	764.91	762.27	591.27	586.27	Lower	2351806.96	235231.77

Note:

ft bgs - feet below ground surface  
AMSL - above mean sea level

TABLE 4.1

**INTERIM GROUNDWATER MONITORING PROGRAM PARAMETER LIST  
HIMCO SITE  
ELKHART, INDIANA**

*Volatile Organic Compounds*

1,1,1-Trichloroethane	Carbon disulfide
1,1,2,2-Tetrachloroethane	Carbon tetrachloride
1,1,2-Trichloroethane	Chlorobenzene
1,1-Dichloroethane	Chlorobromomethane
1,1-Dichloroethene	Chloroethane
1,1-Dichloropropene	Chloroform (Trichloromethane)
1,2,3-Trichlorobenzene	Chloromethane (Methyl Chloride)
1,2,3-Trichloropropane	cis-1,2-Dichloroethene
1,2,4-Trichlorobenzene	cis-1,3-Dichloropropene
1,2,4-Trimethylbenzene	Cymene (p-Isopropyltoluene)
1,2-Dibromo-3-chloropropane (DBCP)	Dibromochloromethane
1,2-Dibromoethane (Ethylene Dibromide)	Dichlorofluoromethane
1,2-Dichlorobenzene	Ethyl Ether
1,2-Dichloroethane	Ethylbenzene
1,2-Dichloroethene (total)	Hexachlorobutadiene
1,2-Dichloropropane	Isopropylbenzene
1,3,5-Trimethylbenzene	m&p-Xylene
1,3-Dichlorobenzene	Methylene chloride
1,3-Dichloropropane	Naphthalene
1,4-Dichlorobenzene	n-Butylbenzene
2,2-Dichloropropane	n-Propylbenzene
2-Butanone (Methyl Ethyl Ketone)	o-Xylene
2-Chloroethyl vinyl ether	Styrene
2-Chlorotoluene	tert-Butylbenzene
2-Hexanone	Tetrachloroethene
2-Phenylbutane (sec-Butylbenzene)	Toluene
4-Chlorotoluene	Total VOCs
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	trans-1,2-Dichloroethene
Acetone	trans-1,3-Dichloropropene
Acrolein	Trichloroethene
Acrylonitrile	Trichlorofluoromethane (CFC-11)
Benzene	Vinyl acetate
Bromobenzene	Vinyl chloride
Bromodichloromethane	Xylene (total)
Bromoform	
Bromomethane (Methyl Bromide)	

TABLE 4.1

INTERIM GROUNDWATER MONITORING PROGRAM PARAMETER LIST  
HIMCO SITE  
ELKHART, INDIANA

*Semi-Volatile Organic Compounds*

1,2,4-Trichlorobenzene	Benzo(a)pyrene
1,2-Dichlorobenzene	Benzo(b)fluoranthene
1,2-Diphenylhydrazine	Benzo(g,h,i)perylene
1,3-Dichlorobenzene	Benzo(k)fluoranthene
1,4-Dichlorobenzene	Benzoic acid
2(3H)-Benzothiazolone	Benzyl Alcohol
2,2'-oxybis(1-Chloropropane) (bis(2-chloroisopropyl) ether)	bis(2-Chloroethoxy)methane
2,4,5-Trichlorophenol	bis(2-Chloroethyl)ether
2,4,6-Trichlorophenol	bis(2-Ethylhexyl)phthalate
2,4-Dichlorophenol	Butyl benzylphthalate
2,4-Dimethylphenol	Carbazole
2,4-Dinitrophenol	Chrysene
2,4-Dinitrotoluene	Dibenz(a,h)anthracene
2,6-Dinitrotoluene	Dibenzofuran
2-Chloronaphthalene	Diethyl phthalate
2-Chlorophenol	Dimethyl phthalate
2-Methylnaphthalene	Di-n-butylphthalate
2-Methylphenol	Di-n-octyl phthalate
2-Nitroaniline	Fluoranthene
2-Nitrophenol	Fluorene
3,3'-Dichlorobenzidine	Hexachlorobenzene
3-Nitroaniline	Hexachlorobutadiene
4,6-Dinitro-2-methylphenol	Hexachlorocyclopentadiene
4-Bromophenyl phenyl ether	Hexachloroethane
4-Chloro-3-methylphenol	Indeno(1,2,3-cd)pyrene
4-Chloroaniline	Isophorone
4-Chlorophenyl phenyl ether	Naphthalene
4-Methylphenol	Nitrobenzene
4-Nitroaniline	N-Nitrosodimethylamine
4-Nitrophenol	N-Nitrosodi-n-propylamine
Acenaphthene	N-Nitrosodiphenylamine
Acenaphthylene	Pentachlorophenol
Aniline	Phenanthrene
Anthracene	Phenol
Benzidine	Pyrene
Benzo(a)anthracene	Total SVOCS

TABLE 4.1

INTERIM GROUNDWATER MONITORING PROGRAM PARAMETER LIST  
HIMCO SITE  
ELKHART, INDIANA

*Metals*

Aluminum	Magnesium
Antimony	Manganese
Arsenic	Mercury
Barium	Nickel
Beryllium	Potassium
Cadmium	Selenium
Calcium	Silver
Chromium Total	Sodium
Cobalt	Thallium
Copper	Tin
Iron	Vanadium
Lead	Zinc

*General Chemistry*

Bromide  
Chloride  
Sulfate  
Cyanide (total)



APPENDIX A

STRATIGRAPHIC AND INSTRUMENTATION LOGS



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 6

PROJECT NAME: HIMCO SITE

HOLE DESIGNATION: WT106C

PROJECT NUMBER: 39611

DATE COMPLETED: March 30, 2011

CLIENT: BAYER HEALTHCARE LLC

DRILLING METHOD: SONIC

LOCATION: ELKHART, IN

FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS106-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2351154.95 EASTING: 235894.48 GROUND SURFACE TOP OF CASING TOP OF RISER	758.06 758.04 757.72						
	TOPSOIL, roots, dark brown.		CONCRETE					
2	SP-SAND, fine grained, trace medium grained, loose, orange stain, slightly moist.	757.06						
4								
6	- saturated at 6.0ft BGS		BENTONITE GROUT					
8			2" Ø PVC WELL CASING					
10			6" Ø BOREHOLE					
12	- 1.5' coarse grained at 11.0ft BGS							
14								
16	SW-SAND, medium to coarse grained, trace gravel, loose, light gray, saturated.	743.06						
18								
20								
22	SW-SAND, fine to medium grained, trace coarse grained, loose, gray, saturated.	736.06						
24								
26	- 1.5' coarse grained, with gravel at 25.5ft BGS							
28								
30	SW-SAND, coarse grained sand and gravel, loose, gray, saturated.	728.06						
32								
34								
36								
38								
		718.56						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 6

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

HOLE DESIGNATION: WT106C

DATE COMPLETED: March 30, 2011

DRILLING METHOD: SONIC

FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS106-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
42	ML-SILT, with sand, firm, slight plasticity, gray, moist. - moist, with clay at 41.0ft BGS							
44								
46								
48	ML-SILTY CLAY, trace sand, firm, gray, moist, intermixed sand seams.	710.06						
50	SM-SILTY SAND, fine grained, loose, tan, saturated.	708.06						
52								
54								
56								
58	ML-SANDY SILT, loose, tan, moist, moist.	700.06						
60	SM-SILTY SAND, fine grained, loose, tan, saturated.	698.06						
62								
64								
66								
68								
70								
72								
74								
76								
78								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA\_CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 3 of 6

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT106C  
DATE COMPLETED: March 30, 2011  
DRILLING METHOD: SONIC  
FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS106-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
82								
84								
86								
88								
90								
92								
94								
96								
98	- 2.5' with coarse gravel and clay at 97.5ft BGS							
100	- 3' with medium sand at 100.0ft BGS							
102								
104								
106								
108								
110								
112								
114								
116								
118	CL-SILTY CLAY, tan.	640.06						
	SM-SILTY SAND, fine grained, loose, tan.	639.06						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611:WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA\_CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 4 of 6

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT106C  
DATE COMPLETED: March 30, 2011  
DRILLING METHOD: SONIC  
FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS106-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE			
				NUMBER	INTERVAL	REC (%)	'N' VALUE
122	saturated.						
124							
126							
128							
130							
132							
134							
136							
138							
140							
142							
144							
146	ML/CL-CLAYEY SILT, soft, with sand, gray, saturated.	612.06					
148							
150	ML/SP - SILT and SAND, soft/loose, fine grained sand, no plasticity, brown, saturated.	608.06					
152							
154	CL/ML - SILT and CLAY, firm, slight to low plasticity, gray, moist.						
156							
158		601.06					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA\_CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 5 of 6

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

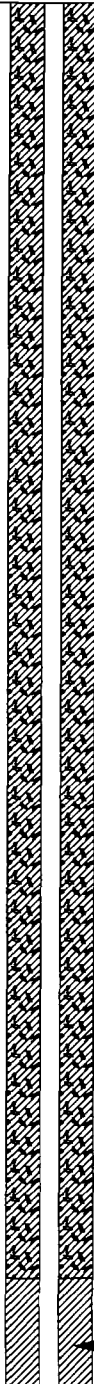

HOLE DESIGNATION: WT106C

DATE COMPLETED: March 30, 2011

DRILLING METHOD: SONIC

FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS106-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
162	ML-SILT, with clay, firm, slight plasticity, gray, moist/wet.  - slightly moist at 171.0ft BGS	595.06						
164								
166								
168								
170								
172								
174								
176								
178								
180								
182	SP - SAND, compact, fine grained, poorly sorted, brown, saturated.  - dense at 193.0ft BGS	567.06						
184								
186								
188								
190								
192								
194								
196								
198								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010 GPJ CRA\_CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 6 of 6

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT106C  
DATE COMPLETED: March 30, 2011  
DRILLING METHOD: SONIC  
FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS106-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE			
				NUMBER	INTERVAL	REC (%)	'N' VALUE
202							
204							
206							
208							
210	END OF BOREHOLE @ 209.0ft BGS	549.06					
212							
214							
216							
218							
220							
222							
224							
226							
228							
230							
232							
234							
236							
238							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M HILVERDA 051010.GPJ CRA CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

Stratigraphy based on VAS115-75

HOLE DESIGNATION: WT115B

DATE COMPLETED: February 22, 2011

DRILLING METHOD: HSA

FIELD PERSONNEL: T. PRANGER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2351923.33 EASTING: 235380.73  TOP OF CASING TOP OF RISER GROUND SURFACE	766.22 765.88 762.70						
2	SP - SAND, trace topsoil, very loose, fine grained, black, moist, grass and tree roots, slight iron staining.	761.70	CONCRETE					
4	SP - SAND, fine to medium grained, very loose, tan, moist, slight iron staining.		BENTONITE GROUT					
6			2" Ø PVC WELL CASING					
8			8" Ø BOREHOLE					
10	- saturated at 9.0ft BGS							
12	- coarse grained, light brown to gray at 11.0ft BGS							
14	- fine grained at 13.0ft BGS							
16	- medium to coarse grained, gray, odor, sulfur smell/rotten material at 15.0ft BGS							
18			BENTONITE CHIPS					
20								
22								
24								
26	- trace fine to coarse gravel, brown, sulfur odor from 25.0 to 27.0ft BGS		2" Ø PVC WELL SCREEN	1				
28	- with gravel, gray from 27.0 to 29.0ft BGS		SAND (#7)					
30	END OF BOREHOLE @ 29.0ft BGS	733.70						
32								
34								
36								
38								

## WELL DETAILS

Screened interval:

739.70 to 734.70ft

23.00 to 28.00ft BGS

Length: 5ft

Diameter: 2in

Material: 2" Ø PVC Screen

Seal:

745.00 to 741.90ft

17.70 to 20.80ft BGS

Material: Bentonite Chips

Sand Pack:

741.90 to 733.70ft

20.80 to 29.00ft BGS

Material: Sand (#7)

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

HOLE DESIGNATION: WT115C

DATE COMPLETED: February 22, 2011

DRILLING METHOD: HSA

FIELD PERSONNEL: T. PRANGER

Stratigraphy based on VAS115-75

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2351929.28 EASTING: 235375.59	TOP OF CASING 766.01 TOP OF RISER 765.71 GROUND SURFACE 762.51						
	SP - SAND, trace topsoil, very loose, fine grained, black, moist, grass and tree roots, slight iron staining.	761.51	CONCRETE					
2	SP - SAND, fine to medium grained, very loose, tan, moist, slight iron staining.							
4								
6			BENTONITE GROUT					
8			2" Ø PVC WELL CASING					
10	- saturated at 9.0ft BGS		8" Ø BOREHOLE					
12	- coarse grained, light brown to gray at 11.0ft BGS							
14	- fine grained at 13.0ft BGS							
16	- medium to coarse grained, gray, odor, sulfur smell/rotten material at 15.0ft BGS							
18								
20								
22								
24								
26								
28	- with gravel, gray from 27.0 to 29.0ft BGS							
30	- coarse grained, trace gravel at 29.0ft BGS							
32								
34								
36								
38								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA\_CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

HOLE DESIGNATION: WT115C

DATE COMPLETED: February 22, 2011

DRILLING METHOD: HSA

FIELD PERSONNEL: T. PRANGER

Stratigraphy based on VAS115-75

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
42	- gravel, brown from 43.0 to 46.0ft BGS							
44								
46	- medium to coarse grained, brown at 46.0ft BGS							
48								
50								
52								
54								
56								
58								
60								
62								
64	- dark brown at 65.0ft BGS							
66								
68								
70	END OF BOREHOLE @ 69.0ft BGS	693.51		1				
72								
74								
76								
78								

**WELL DETAILS**  
Screened interval:  
699.51 to 694.51ft  
63.00 to 68.00ft BGS  
Length: 5ft  
Diameter: 2in  
Material: 2" Ø PVC Screen  
Seal:  
704.51 to 701.51ft  
58.00 to 61.00ft BGS  
Material: Bentonite Chips  
Sand Pack:  
701.51 to 693.51ft  
61.00 to 69.00ft BGS  
Material: Sand (#7)

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010 GPJ CRA\_CORP GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT120C  
DATE COMPLETED: February 24, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS120-150

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2352052.29 EASTING: 236578.54	GROUND SURFACE 762.57 TOP OF CASING 762.53 TOP OF RISER 762.11						
	TOPSOIL, roots		CONCRETE					
2	SP-SAND, loose, orange stain, slightly moist	761.77	8" Ø BOREHOLE					
4			BENTONITE GROUT					
6			2" Ø PVC WELL CASING					
8			BENTONITE CHIPS					
10	SW-SAND, coarse grained, with coarse gravel, loose, light gray, moist	753.07 752.57	2" Ø PVC WELL SCREEN					
12	SW-SAND, fine to medium grained, brown-orange, saturated							
14	SW-SAND, trace fine fine gravel, medium grained, dark brown to gray, wet.	748.57						
16			SAND (#7)					
18	END OF BOREHOLE @ 18.0ft BGS	744.57						
20								
22								
24								
26								
28								
30								
32								
34								

## WELL DETAILS

Screened interval:  
750.57 to 745.57ft  
12.00 to 17.00ft BGS  
Length: 5ft  
Diameter: 2in  
Material: 2" Ø PVC Screen  
Seal:  
754.57 to 752.57ft  
8.00 to 10.00ft BGS  
Material: 3/8" Hole Plug  
Sand Pack:  
752.57 to 744.57ft  
10.00 to 18.00ft BGS  
Material: Sand (#7)

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA\_CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT121A  
DATE COMPLETED: February 28, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: T. PRANGER

Stratigraphy based on VAS121-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	N VALUE	
	NORTHING: 2351213 71 EASTING: 236533 21	TOP OF CASING 758.88 GROUND SURFACE 758.87 TOP OF RISER 758.48						
	TOPSOIL, roots	758.07	CONCRETE					
	SP-SAND, loose, orange stain, slightly moist		BENTONITE GROUT					
2			2" Ø PVC WELL CASING					
4			8" Ø BOREHOLE					
6								
8								
10	SW-SAND, coarse grained, with coarse gravel, loose, light gray, moist	749.37 748.87	3/8" HOLE PLUG					
12	SW-SAND, fine to medium grained, brown-orange, saturated							
14								
16								
18								
20								
22			2" Ø PVC WELL SCREEN					
24	END OF BOREHOLE @ 24.0ft BGS	734.87	SAND (#7)					
26								
28								
30								
32								
34								

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA CORP.GOT 4/18/11

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

HOLE DESIGNATION: WT121B

DATE COMPLETED: February 28, 2011

DRILLING METHOD: HSA

FIELD PERSONNEL: T. PRANGER

Stratigraphy based on VAS121-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2351219.53 EASTING: 236532.99	TOP OF CASING 758.80 GROUND SURFACE 758.74 TOP OF RISER 758.46						
	GP/SP - GRAVEL AND SAND	758.44	CONCRETE					
2	SP - SAND, trace cobble, loose, coarse grained to trace fine grained sand, brown, moist.							
4								
6			BENTONITE GROUT					
8			2" Ø PVC WELL CASING					
10	- saturated from 8.5 to 9.0ft BGS		8" Ø BOREHOLE					
12								
14	- no cobbles at 12.0ft BGS							
16								
18								
20								
22								
24								
26	GP/SP - GRAVEL and SAND, trace cobbles, loose, coarse grained sand, gray, saturated.	733.74						
28								
30								
32								
34								
36								
38	CI - CLAY, trace silt, firm, medium plasticity, gray, moist.	722.24						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT121B  
DATE COMPLETED: February 28, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: T. PRANGER

Stratigraphy based on VAS121-225

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
42								
44								
46								
48								
50								
52								
54								
56	SP - SAND, loose to compact, fine grained, poorly graded, brown, saturated.	703.74	3/8" HOLE PLUG					
58								
60			2" Ø PVC WELL SCREEN					
62	- medium grained at 62.0ft BGS		SAND (#7)					
64	END OF BOREHOLE @ 63.0ft BGS	695.74						
66								
68								
70								
72								
74								
76								
78								

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA\_CORP.GDT 4/18/11

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 1

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

Stratigraphy based on VAS105-150

HOLE DESIGNATION: WT122A

DATE COMPLETED: February 23, 2011

DRILLING METHOD: HSA

FIELD PERSONNEL: J. HARGENS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING 2351740.44 EASTING: 235154.91	GROUND SURFACE 763.03 TOP OF CASING 762.89 TOP OF RISER 762.58						
	TOPSOIL, sandy, with grass roots, dark brown	762.03	CONCRETE					
-2	SP-SAND, fine to medium grained, trace gravel, loose, light brown, slightly moist, orange stain							
-4								
-6			BENTONITE GROUT					
-8	- saturated at 8.0ft BGS		2" Ø PVC WELL CASING					
-10	- coarse grained, less fine grained material at 10.0ft BGS		8" Ø BOREHOLE					
-12								
-14								
-16								
-18	SW-GRAVELLY SAND, coarse grained, trace silt, loose, gray, saturated	746.03	BENTONITE CHIPS					
-20	- trace fine to coarse grained gravel from 20.0 to 22.0ft BGS							
-22								
-24	SP-SAND, fine grained, trace silt, loose, gray, saturated	739.03	2" Ø PVC WELL SCREEN					
-26	GW-GRAVEL, coarse grained, with coarse sand, trace silt, loose, gray, with coarse gravel END OF BOREHOLE @ 26.0ft BGS	738.03 737.03	SAND (#7)					
-28								
-30								
-32								
-34								

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA CORP.GDT 4/18/11

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 2

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT122B  
DATE COMPLETED: February 23, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS105-150

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2351740.49 EASTING: 235148.61 GROUND SURFACE TOP OF CASING TOP OF RISER	762.98 762.94 762.75						
	TOPSOIL, sandy, with grass roots, dark brown	761.98	CONCRETE					
2	SP-SAND, fine to medium grained, trace gravel, loose, light brown, slightly moist, orange stain							
4								
6			BENTONITE GROUT					
8	- saturated at 8.0ft BGS		2" Ø PVC WELL CASING					
10	- coarse grained, less fine grained material at 10.0ft BGS		8" Ø BOREHOLE					
12								
14								
16								
18	SW-GRAVELLY SAND, coarse grained, trace silt, loose, gray, saturated	745.98						
20								
22								
24	SP-SAND, fine grained, trace silt, loose, gray, saturated	738.98						
26	GW-GRAVEL, coarse grained, with coarse sand, trace silt, loose, gray, with coarse gravel	737.98						
28								
30								
32								
34	- 2' fine sand layer at 33.0ft BGS							
36								
38								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 2

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN  
Stratigraphy based on VAS105-150

HOLE DESIGNATION: WT122B  
DATE COMPLETED: February 23, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: J. HARGENS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE			
				NUMBER	INTERVAL	REC (%)	'N' VALUE
42							
44							
46	- 1' large 1" cobbles at 46.0ft BGS						
48							
50	SP-SAND, fine grained, with medium grained, trace gravel and silt, loose, gray, saturated	712.98					
52							
54							
56							
58							
60	- fine to coarse grained from 60.0 to 62.0ft BGS						
62	GP-GRAVEL, coarse grained, loose	700.98					
64	END OF BOREHOLE @ 64.0ft BGS	698.98					
66							
68							
70							
72							
74							
76							
78							

CV/FRI/IR/DFN I OG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA CORP.GDT 4/18/11

## WELL DETAILS

Screened interval:  
704.98 to 699.98ft  
58.00 to 63.00ft BGS  
Length: 5ft  
Diameter: 2in  
Material: 2" Ø PVC Screen  
Seal:  
710.68 to 706.98ft  
52.30 to 56.00ft BGS  
Material: Bentonite Chips  
Sand Pack:  
706.98 to 698.98ft  
56.00 to 64.00ft BGS  
Material: Sand (#7)

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 1 of 3

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN  
Stratigraphy based on VAS105-150

HOLE DESIGNATION: WT122C  
DATE COMPLETED: February 24, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: J. HARGENS

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
	NORTHING: 2351743.38 EASTING: 235142.97	TOP OF CASING GROUND SURFACE TOP OF RISER 763.04 762.97 762.63						
	TOPSOIL, sandy, with grass roots, dark brown		CONCRETE					
2	SP-SAND, fine to medium grained, trace gravel, loose, light brown, slightly moist, orange stain	761.97						
4								
6			BENTONITE GROUT					
8	- saturated at 8.0ft BGS		2" Ø PVC WELL CASING					
10	- coarse grained, less fine grained material at 10.0ft BGS		8" Ø BOREHOLE					
12								
14								
16								
18	SW-GRAVELLY SAND, coarse grained, trace silt, loose, gray, saturated	745.97						
20								
22								
24	SP-SAND, fine grained, trace silt, loose, gray, saturated	738.97						
26	GW-GRAVEL, coarse grained, with coarse sand, trace silt, loose, gray, with coarse gravel	737.97						
28								
30								
32								
34	- 2' fine sand layer at 33.0ft BGS							
36								
38								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

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# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 2 of 3

PROJECT NAME: HIMCO SITE  
PROJECT NUMBER: 39611  
CLIENT: BAYER HEALTHCARE LLC  
LOCATION: ELKHART, IN

HOLE DESIGNATION: WT122C  
DATE COMPLETED: February 24, 2011  
DRILLING METHOD: HSA  
FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS105-150

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
42								
44								
46	- 1' large 1" cobbles at 46.0ft BGS							
48								
50	SP-SAND, fine grained, with medium grained, trace gravel and silt, loose, gray, saturated	712.97						
52								
54								
56	- compact at 56.0ft BGS							
58								
60	GP-GRAVEL, coarse grained, loose	702.97						
62								
64								
66								
68								
70	SW-SAND, with gravel, coarse to medium grained sand, very loose, light tan, saturated	692.97						
72								
74								
76	SW-SAND, with gravel, coarse grained, trace cobbles, loose, light tan to light gray, saturated	687.97						
78								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 051010.GPJ CRA CORP.GDT 4/18/11



# STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

Page 3 of 3

PROJECT NAME: HIMCO SITE

PROJECT NUMBER: 39611

CLIENT: BAYER HEALTHCARE LLC

LOCATION: ELKHART, IN

HOLE DESIGNATION: WT122C

DATE COMPLETED: February 24, 2011

DRILLING METHOD: HSA

FIELD PERSONNEL: J. HARGENS

Stratigraphy based on VAS105-150

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft	MONITORING WELL	SAMPLE				
				NUMBER	INTERVAL	REC (%)	'N' VALUE	
82	SW-SAND, coarse to medium grained, trace gravel, loose, tan to light gray, saturated	682.97						
84								
86								
88								
90	SM-SILTY SAND, fine grained sand, loose, poorly graded, tan to light gray, saturated	672.97						
92								
94								
96								
98	- 1' clay and silt layer at 97.0ft BGS							
100	- sand from 100.0 to 102.0ft BGS							
102								
104	CL-SILTY CLAY, low plasticity, light brown, very moist END OF BOREHOLE @ 104.0ft BGS	659.97						
106								
108		655.97						
110								
112								
114								
116								
118								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

OVERBURDEN LOG 039611-WIN-TSFRD TO M. HILVERDA 05/10/10 GPJ CRA\_CORP GDT 4/18/11